

CLAIMS

We claim:

1. An automated transaction machine comprising:

at least one computer;

5 at least one transaction function device, in operative connection with the computer;

an XFS layer operative in the computer;

a device driver layer operative in the computer, wherein the device driver layer is operative responsive to the XFS layer to control the operation of the transaction function device, wherein the device driver layer includes at least one device driver component that corresponds to the transaction function device;

an Open Device Services (ODS) layer operative in the computer, wherein the XFS layer is operative responsive to the ODS layer to communicate with the device driver layer, wherein the ODS layer includes at least one ODS component that corresponds to the device driver component; and

a terminal application operative in the computer, wherein the ODS component is operative responsive to the terminal application to control the operation of the transaction function device through communication with the XFS layer.

2. The automated transaction machine according to claim 1, wherein when the
5 transaction function device is exchanged with a second transaction function device of the same type and the device driver component is exchanged with a second device driver component that corresponds to the second transaction function device, the ODS layer is operative to enable the ODS component to be exchanged for a second ODS component that corresponds to the second device driver component.

3. The automated transaction machine according to claim 1, further comprising a plurality of transaction function devices in operative connection with the computer, wherein for each transaction function device, the device driver layer includes a corresponding device driver component and the ODS layer includes a corresponding ODS component.

4. The automated transaction machine according to claim 1, wherein the terminal
15 application includes at least one transaction element component, wherein the transaction element component is operative to communicate with the ODS layer.

5. The automated transaction machine according to claim 4, further comprising a second transaction function device in operative connection with the computer, wherein the ODS layer includes a second ODS component, and wherein the transaction element component is operative

responsive to the terminal application to communicate with both the first and second ODS components to have the first transaction function device perform a first transaction function and to have the second transaction function device perform a second transaction function.

6. The automated transaction machine according to claim 5, wherein the first transaction function device includes a card reader and the second transaction function device includes a sound output device, and wherein the first transaction function includes returning a card to a user and the second transaction function includes outputting an audible sound.

7. The automated transaction machine according to claim 5, wherein the transaction element component includes an ActiveX component.

8. The automated transaction machine according to claim 5, wherein the transaction element component includes a Java component.

9. The automated transaction machine according to claim 1, further comprising a second XFS layer operative in the computer, a second transaction function device in operative connection with the computer, wherein the ODS layer includes a second ODS component, wherein the device driver layer includes a second device driver component, wherein the first ODS component is operative to communicate with the first device driver component through the first XFS layer to control the operation of the first transaction function device, and wherein the second ODS component is operative to communicate with the second device driver component through the second XFS layer to control the operation of the second transaction function device.

10. The automated transaction machine according to claim 9, wherein the first XFS layer includes a WOSA/XFS manager, and wherein the second XFS layer includes a J/XFS kernel.

11. The automated transaction machine according to claim 1, wherein the XFS layer includes a WOSA/XFS manager.

5 12. The automated transaction machine according to claim 11, wherein the transaction function device includes a cash dispenser.

13. The automated transaction machine according to claim 1, wherein the XFS layer includes a J/XFS kernel.

14. The automated transaction machine according to claim 13, further comprising a java virtual machine operative in the computer, wherein both the J/XFS kernel and the ODS component are operative in the java virtual machine.

15. The automated transaction machine according to claim 14, wherein the terminal application includes at least one Java component that is operatively programmed to control the transaction function device through communication with the ODS component.

16. The automated transaction machine according to claim 1, wherein the device driver component includes a diagnostic interface, wherein the diagnostic interface provides an external

application with access to at least one internal hardware component of the transaction function device.

17. The automated transaction machine according to claim 16, further comprising a diagnostic application, wherein the diagnostic application is operative to access the internal hardware component of the transaction function device through communication with the diagnostic interface, wherein the communication with the diagnostic interface pass through the XFS layer.

18. The automated transaction machine according to claim 17, wherein the diagnostic application is operative to deactivate the transaction function device with respect to the XFS layer, through communication with the XFS layer.

19. The automated transaction machine according to claim 17, wherein the internal hardware component includes a motor.

20. The automated transaction machine according to claim 17, wherein the internal hardware component includes a sensor.

15 21. A method comprising:

a) installing an XFS layer in an automated transaction machine, wherein the machine includes at least one transaction function device;

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- b) installing a device driver component in the machine that corresponds to the transaction function device, wherein the device driver component is operative responsive to the XFS layer to control the operation of the transaction function device;
- c) installing an Open Device Services (ODS) component in the machine that corresponds to the device driver component; and
- d) installing a terminal application in the machine, wherein the terminal application is operative to control the operation of the transaction function device through communicate with the ODS component, wherein the ODS component is operatively programmed to communicate with the device driver component through the XFS layer.

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22. The method according to claim 21, wherein the automated transaction machine includes a second transaction function device, and further comprising:

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- e) installing a second device driver component in the machine that corresponds to the second transaction function device, wherein the second device driver component is operative responsive to the XFS layer to control the operation of the second transaction function device;

5 f) installing a second ODS component in the machine that corresponds to the second device driver component; and

wherein the terminal application is further operative to control the operation of the second transaction function device through communicate with the second ODS component, wherein the
5 second ODS component is operatively programmed to communicate with the second device driver component through the XFS layer.

10 23. The method according to claim 22, wherein in step (a) the terminal application includes a transaction element component, wherein the transaction component is operatively programmed to control the operation of both the first transaction function device and the second transaction function device through communication with both the first ODS component and the second ODS component.

15 24. The method according to claim 21, further comprising:

e) replacing the first transaction function device with a second transaction function device that is operative to perform the same type of transaction function as the first transaction function device;

f) installing a second device driver component in the machine that corresponds to the second transaction function device, wherein the second device driver

component is operative responsive to the XFS layer to control the operation of the second transaction function device;

g) installing a second ODS component in the machine that corresponds to the second device driver component; and

5 wherein the terminal application is operative without modification to control the operation of the second transaction function device through communicate with the second ODS component, wherein the second ODS component is operatively programmed to communicate with the second device driver component through the XFS layer.

25. The method according to claim 21 further comprising:

e) installing a diagnostic application in the machine, wherein the diagnostic application is operative to communicate with the device driver component independently of the XFS layer, wherein the device driver component is responsive to the diagnostic application to access hardware components of the transaction function device.

15 26. A method comprising:

a) providing at least one input through an input device of an automated transaction machine, wherein the machine includes at least one transaction function device;

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- b) providing a first communication between a terminal application of the machine and a first Open Device Services (ODS) component responsive to the at least one input;
- c) providing a second communication between the first ODS component and a first XFS layer responsive to the first communication;
- d) providing a third communication between the first XFS layer and a first device driver component responsive to the second communication;
- e) providing a fourth communication between the first device driver component and a first transaction function device of the machine responsive to the third communication; and
- f) operating the first transaction function device responsive to the fourth communication.

27. The method according to claim 26, further comprising:

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- g) providing a fifth communication between the terminal application and a second ODS component responsive to the at least one input;

h) providing a sixth communication between the second ODS component and the first XFS layer responsive to the fifth communication;

i) providing a seventh communication between the first XFS layer and a second device driver component responsive to the sixth communication;

5 j) providing an eighth communication between the second device driver component and a second transaction function device responsive to the seventh communication; and

k) operating the second transaction function device responsive to the eighth communication.

28. The method according to claim 27, wherein the terminal application includes at least one transaction element component, and wherein in steps (b) and (g) the transaction element component is operative to provide both the first communication and the fifth communication.

29. The method according to claim 26, further comprising:

15 g) providing a fifth communication between the terminal application and a second ODS component responsive to the at least one input;

h) providing a sixth communication between the second ODS component and a second XFS layer responsive to the fifth communication;

i) providing a seventh communication between the second XFS layer and a second device driver component responsive to the sixth communication;

5 j) providing an eighth communication between the second device driver component and a second transaction function device responsive to the seventh communication; and

k) operating the second transaction function device responsive to the eighth communication.

10 30. The method according to claim 29, wherein in step (b) the first XFS layer includes a WOSA/XFS manager and wherein in step (h) the second XFS layer includes a J/XFS kernel.

15 31. The method according to claim 26 wherein in step (b) the first XFS layer includes a WOSA/XFS manager.

32. The method according to claim 26 wherein in step (b) the first XFS layer includes a J/XFS kernel.

33. The method according to claim 26 wherein the first transaction function device includes a cash dispenser, wherein step (f) includes dispensing cash with the cash dispenser responsive to the fourth communication.

34. The method according to claim 26, further comprising:

5 g) providing a fifth communication between a diagnostic application and the first device driver component, wherein the fifth communication does not pass through the first XFS layer; and

h) accessing the transaction function device with the first device driver component responsive to the fifth communication.

35. The method according to claim 34, wherein prior to step (h) further comprising:

i) determining that the diagnostic application is authorized to access the transaction function device through communication with the device driver component.

36. Computer readable media bearing instructions which are operative to cause at least one computer in the machine to cause the machine to carry out the method steps recited in claim

15 26.